

Applicant : Bo Pi, et al.  
Serial No. : 09/838,707  
Filed : April 18, 2001  
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Attorney's Docket No.: 07402-026001

REMARKS

Claims 1-30 are pending in the application. Claims 1-30 of the application stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over various combinations of U.S. Patent No. 6,259,085 to Holland ("Holland"), U.S. Patent No. 5,510,285 to Kim ("Kim"), U.S. Patent No. 5,381,013 to Cox et al. ("Cox"), and U.S. Patent No. 5,262,633 to Kasai et al. ("Kasai").

In view of the arguments herein, Applicant respectfully traverses the rejections and asks that they be withdrawn.

Claim 1

Claim 1 is patentable over Holland and Kim at least because Holland and Kim do not teach or suggest "a grid of conducting wires proximate to and in electrical contact with the bias layer and configured to define an array of pixels corresponding to the array of doped gate regions; wherein the grid of conducting wires is configured to be electrically coupled to a voltage source and to distribute a bias voltage on the bias layer so as to bias the substrate with respect to the doped gate regions," as recited in claim 1.

First, Kim does not teach a grid of conducting wires proximate to and in electrical contact with a bias layer, as recited in claim 1.

The OSM2 lines of Kim do not form a grid. As shown in Figure 6, OSM2 are a series of vertical lines that each connect to different transfer gates (through vias 7 of Figure 6; note the changing pattern of vias for each different OSM2). Applicant finds no teaching or suggestion in Kim that any of the OSM2 lines connect to each other electrically.

Kim teaches that each OSM2 provides optical shielding for parts of the CCD system except for the photodiode regions (see, e.g., column 5, lines 9-14 of Kim). Each of the OSM2 structures also provide electrical contact to one or more transfer gate electrodes receiving the same clock signal. (see, e.g., column 7, lines 1-6 of Kim). That is, a particular OSM2 line would connect transfer gate electrodes receiving the  $V_{\phi 1}$  clock signal, a different OSM 2 would connect transfer gate electrodes receiving the  $V_{\phi 2}$  signal, and so forth.

Further, Kim does not show that different OSM2 lines coupling groups of transfer gate electrodes receiving the same clock signal being electrically connecting. FIG. 7f of Kim shows a BB' cross section of FIG. 6. It appears to Applicant that the OSM2 regions to the left side of the figure and to the

right side of the figure couple the respective transfer gate electrode to the same clock signal. Although it may be possible to connect these two OSM2 regions, Applicant fails to see a teaching in Kim that these OSM2 regions are connected. That is, Applicant finds no description of forming such interconnections, and sees no such interconnection in the figures.

The three OSM2 regions between the two outermost OSM2 regions couple different clock signals to different groups of transfer gate electrodes. Again, Applicant sees no description of interconnecting any of these OSM2 lines to other OSM2 lines.

For at least these reasons, Applicant finds no teaching in Kim for forming a grid of wires.

Even if the office action were correct in its assertion that the OSM2 of Kim form a grid, Kim does not teach or suggest that the OSM2 are proximate to and in electrical contact with a bias layer. Instead, the OSM2 "connect between transfer gates having the same clock signals applied thereto of the transfer gates PG1 to PG4 formed repeatedly." (See, e.g., column 5, lines 5-8 of Kim).

Additionally, the office action fails to meet its prima facie burden for showing a motivation to combine the references. The office action states "It would have been obvious to one of ordinary skill in the art at the time the invention was made to

modify the charge coupled device of Holland by incorporating conducting wires to form electrical connections to the electrodes as taught by Kim." (See pages 2-3 of the office action.)

No motivation to combine the references is given. The above statement is merely a conclusion, supported by no evidence in the references whatsoever. Because of this lack of evidence, it appears that the rejections are based on hindsight and use the teaching of this application rather than that of the cited references to selectively combine different parts of the references. This violates the standards under 35 U.S.C. 103(a).

More specifically, , the Federal Circuit requires that "When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness." *In Re Sang-Su Lee*, 277 F.3d 1338, 1343 (Fed. Cir. 2002). Further, "particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed." *Id.* That is, to meet its burden of prima facie obviousness, the office action must provide particular findings that a person skilled in

the art would use to select the particular components of the references for combination.

The motivation to combine must not come from Applicant's specification. As outlined in the response to the previous office action, claim 1 provides a number of benefits not found in Holland and Kim.

At least because neither Holland nor Kim teaches a grid as recited in claim 1, and because there is no motivation to combine the references, claim 1 is patentable over Holland and Kim, alone or in combination.

Claims 2-7 and 29-30

Claims 2-7 and 29-30 depend from claim 1, and are therefore patentable for at least the same reasons stated above with respect to claim 1.

Claim 7

Claim 7 is patentable for at least the additional reason that none of the references teach or suggest "a scintillation array comprising scintillation elements ... wherein the scintillation array includes optically reflective surfaces disposed between the scintillation elements to optically isolate one scintillation element from another," as recited in claim 7.

The office action asserts that the scintillator array of claim 7 is an obvious modification to the scintillator of Cox.

Applicants respectfully disagree. *St. Regis Paper Co. v. Bemis Co.*, cited in the office action, does not so teach. Instead, *St. Regis Paper Co.* held that multiple layering in a bag did not provide the necessary "synergy" necessary to patentability.

*St. Regis Paper* at 549 F.2d 833, 838 (1977). *St. Regis Paper* does not stand for the blanket proposition that duplicating an element is not obvious, and has been held to be "heavily fact dependent" in *Ex Parte Yutaka Urino and Tomoki Saito*, Board of Patent Appeals and Interferences Appeal No. 96-0346 (Bd.Pat.App & Interf. 1996, not published).

Further, rather than merely duplicating a single scintillator (e.g., a scintillator as shown in Cox), claim 7 includes additional elements. For example, claim 7 includes optically reflective surfaces disposed between the scintillation elements to optically isolate one scintillation element from another, and recites that the scintillation elements are aligned with and optically coupled to a corresponding one of the array of pixels.

Thus, providing a scintillator array is not so simple as mere duplication. For example, in the implementation shown in FIG. 3 of the current application and described on page 8, the scintillator crystal is segmented with trenches 320, and the

scintillator array is fabricated to align the segments defined by trenches 320 with the pixels of the photodiode array 100.

For at least this additional reason, claim 7 is patentable over Holland, Kim, and Cox, alone or in combination.

Claim 19

Claim 19 recites features similar to those in claim 1, and is therefore patentable for at least the same reasons as stated above with respect to claim 1.

Claims 20-28

Claims 20-28 depend from claim 19, and are therefore patentable for at least the same reasons as stated above with respect to claim 19.

Claim 20

Claim 20 includes features similar to claim 7, and is therefore patentable for at least the same additional reasons as stated above with respect to claim 7.

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CONCLUSION

In view of the foregoing remarks, Applicant believes that pending claims 1-30 are in condition for allowance, and asks that all claims be allowed.

If the Examiner has any questions regarding this response, the Examiner is invited to telephone the undersigned at (858) 678-5070.


Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 2/6/03



Linda G. Gunderson  
Reg. No. 46,341

PTO Customer Number 20985 

Fish & Richardson P.C.  
4350 La Jolla Village Drive, Suite 500  
San Diego, California 92122  
Telephone: (858) 678-5070  
Facsimile: (858) 678-5099